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RVD2009-02

Re-evaluation Decision

Picloram

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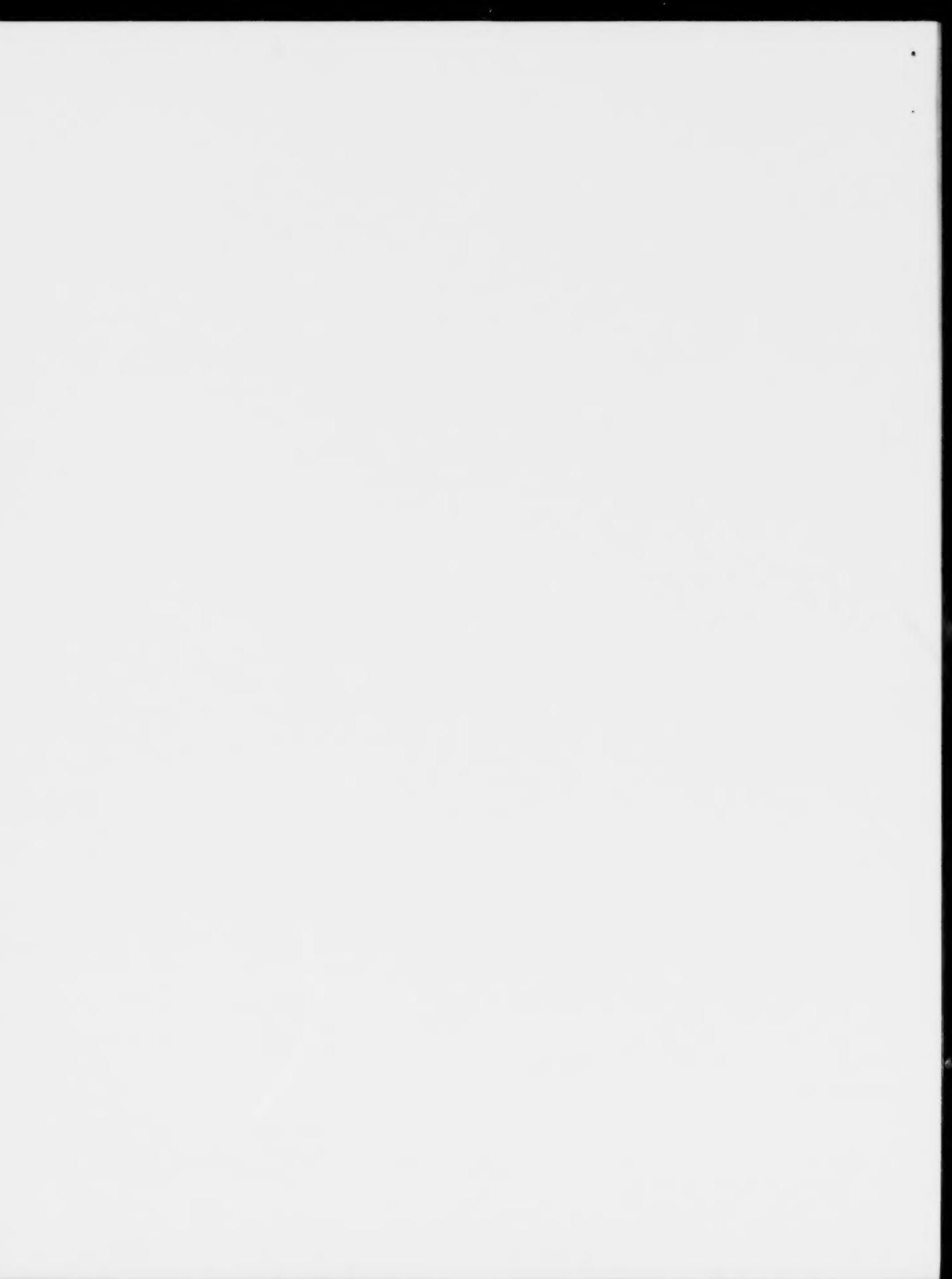
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Overview

Re-evaluation Decision

After a re-evaluation of the herbicide picloram, Health Canada's Pest Management Regulatory Agency (PMRA), under the authority of the *Pest Control Products Act* and Regulations, is granting continued registration of products containing picloram for sale and use in Canada.

An evaluation of available scientific information found that products containing picloram do not present unacceptable risks to human health or the environment when used according to label directions. As a condition of the continued registration of picloram uses, new risk-reduction measures must be included on the labels of all products.

The regulatory approach for the re-evaluation of picloram was first presented in Proposed Re-evaluation Decision document PRVD2007-04, *Picloram*, a consultation document.¹ This Re-evaluation Decision document² describes this stage of PMRA's regulatory process for the re-evaluation of picloram as well as summarizes the Agency's decision and the reasons for it. Appendix I summarizes the comments received during the consultation process and provides the PMRA's response to these comments. This decision is consistent with the proposed re-evaluation decision stated in PRVD2007-04. To comply with this decision, registrants of products containing picloram will be informed of the specific requirements affecting their product registration(s) and of regulatory options available to them.

What Does Health Canada Consider When Making a Re-evaluation Decision?

The PMRA's pesticide re-evaluation program considers potential risks, as well as value, of pesticide products to ensure they meet modern standards established to protect human health and the environment. Regulatory Directive DIR2001-03, *PMRA Re-evaluation Program*, presents the details of the re-evaluation activities and program structure.

Picloram, one of the active ingredients in the current re-evaluation cycle, has been re-evaluated under Re-evaluation Program 1. This program relies as much as possible on foreign reviews, typically United States Environmental Protection Agency (USEPA) Reregistration Eligibility Decision (RED) documents. For products to be re-evaluated under Program 1, the foreign review must meet the following conditions:

- it covers the main science areas, such as human health and the environment, that are necessary for Canadian regulatory decisions;

¹ "Consultation statement" as required by subsection 28(2) of the *Pest Control Products Act*.

² "Decision statement" as required by subsection 28(5) of the *Pest Control Products Act*.

- it addresses the active ingredient and the main formulation types registered in Canada; and
- it is relevant to registered Canadian uses.

Based on the outcome of foreign reviews and a review of the chemistry of Canadian products, the PMRA has made a regulatory decision and requires appropriate risk-reduction measures for Canadian uses of picloram. In this decision, the PMRA took into account the Canadian use pattern and issues (e.g. the federal Toxic Substances Management Policy [TSMP]).

The USEPA re-evaluated picloram and published its conclusions in a 1995 RED and a health assessment in a 1999 Federal Register document for the establishment of tolerances.

For more details on the information presented in this Re-evaluation Decision, please refer to the Science Evaluation in the related Proposed Re-evaluation Decision PRVD2007-04, *Picloram*.

What Is Picloram?

Picloram is a herbicide used to control weeds on pastures, rangelands and non-crop areas such as around farm buildings, fencerows and roadsides as well as wheat and barley crops and on timothy and brome grass crops (grown for seed) in Western Canada. It is used to control weeds and brush on right-of-ways throughout Canada. Picloram is also used as spot treatment on cereals; however, this use is no longer being supported by the registrant and will be removed from the label. All other uses are being supported by the registrant and were considered in this re-evaluation.

Health Considerations

Can Approved Uses of Picloram Affect Human Health?

Picloram is unlikely to affect your health when used according to the revised label directions, provided additional risk-reduction measures are stated on labels of products containing picloram.

People could be exposed to picloram through consumption of food and water, working as a mixer/loader/applicator or by entering treated sites. The PMRA considers two key factors when assessing health risks: the levels at which no health effects occur and the levels to which people may be exposed. The dose levels used to assess risks are established to protect the most sensitive human population (e.g. children and nursing mothers). Only uses for which exposure is well below levels that cause no effects in animal testing are considered acceptable for continued registration.

The USEPA concluded that picloram was unlikely to affect human health provided that risk-reduction measures were implemented. These conclusions apply to the Canadian situation, and equivalent risk-reduction measures are required.

Maximum Residue Limits

The *Food and Drugs Act* prohibits the sale of food containing a pesticide residue that exceeds the established maximum residue limit (MRL). Pesticide MRLs are established for *Food and Drugs Act* purposes through the evaluation of scientific data under the *Pest Control Products Act*. Each MRL value defines the maximum concentration in parts per million (ppm) of a pesticide allowed in/on certain foods. Food containing a pesticide residue that does not exceed the established MRL does not pose an unacceptable health risk.

Picloram is currently registered in Canada for use on wheat and barley as well as timothy and brome grass (grown for seed) and could be used in other countries on crops that are imported into Canada. MRLs for picloram are established in Canada for the following commodities:

- kidney and meat by-products of cattle, goats, hogs, horses and sheep at 0.4 ppm;
- wheat; kidney and meat by-products of poultry at 0.2 ppm;
- barley at 0.1 ppm; and
- eggs; fat, liver and meat of cattle, goats, hogs, horses, poultry and sheep; milk at 0.05 ppm.

Where no specific MRL has been established, a default MRL of 0.1 ppm applies, which means that pesticide residues in a food commodity must not exceed 0.1 ppm. However, changes to this general MRL may be implemented in the future, as indicated in the Discussion Document DIS2006-01, Revocation of the 0.1 ppm as a General Maximum Residue Limit for Food Pesticide Residues [Regulation B.15.002(1)]. If and when the general MRL is revoked, a transition strategy will be established to allow permanent MRLs to be set.

Environmental Considerations

What Happens When Picloram Is Introduced Into the Environment?

Picloram is unlikely to affect non-target organisms, provided additional risk-reduction measures are stated on labels of products containing picloram.

Non-target organisms (e.g. birds, mammals, insects, aquatic organisms and terrestrial plants) could be exposed to picloram in the environment. Environmental risk is assessed by the risk quotient method—the ratio of the estimated environmental concentration to the relevant effects endpoint of concern. The resulting risk quotients are compared to corresponding levels of concern. A risk quotient less than the level of concern is considered a low risk to non-target organisms, whereas a risk quotient greater than the level of concern indicates some degree of risk.

The USEPA concluded that the reregistration of picloram was acceptable provided risk-reduction measures to further protect the environment were implemented. These conclusions apply to the Canadian situation, and equivalent risk-reduction measures are required.

Measures to Minimize Risk

Labels of registered pesticide products include specific instructions for use. Directions include risk-reduction measures to protect human and environmental health. These directions must be followed by law. As a result of the re-evaluation of picloram, the PMRA is proposing further risk-reduction measures for product labels.

Human Health

- Additional protective equipment and a label statement warning about the potential for picloram products containing the potassium salt form to cause allergic reactions to protect mixer/loader/applicators
- Restricted-entry intervals to protect workers re-entering treated sites

Environment

- Additional advisory label statements to reduce potential surface and groundwater contamination
- A reduction of maximum rates per application and per year in addition to buffer zones for aquatic and terrestrial habitats to protect non-target sensitive aquatic organisms and terrestrial plants

Appendix II lists all required label amendments, including instructions related to basic hygiene practices.

Other Information

Any person may file a notice of objection³ regarding this decision on picloram within 60 days from the date of publication of this Re-evaluation Decision. For more information regarding the basis for objecting (which must be based on scientific grounds), please refer to the PMRA's website (Request a Reconsideration of Decision, www.pmra-arla.gc.ca/english/pubreg/reconsideration-e.html), or contact the PMRA's Pest Management Information Service by phone (1-800-267-3615) or by e-mail (pmra_infoserv@hc-sc.gc.ca).

³ As per subsection 35(1) of the *Pest Control Products Act*.

Appendix I Comments and Responses

1.0 Comment on Maximum Residue Limits

It is stated in PRVD2007-04 for picloram that "No specific MRLs have been established for picloram in Canada." There are a number of MRLs established for picloram in Canada, including values on wheat (0.2 ppm), barley (0.1 ppm) and a number of livestock commodities (0.05 or 0.4 ppm).

Response

MRLs for picloram are established in Canada for the following commodities: Kidney and meat by-products of cattle, goats, hogs, horses and sheep at 0.4 ppm;

- wheat; kidney and meat by-products of poultry at 0.2 ppm;
- barley at 0.1 ppm; and
- eggs; fat, liver and meat of cattle, goats, hogs, horses, poultry and sheep; milk at 0.05 ppm.

This information has been incorporated into the Maximum Residue Limits section of this decision document.

2.0 Comment on the Proposed Dermal Sensitizer Labelling

In the PRVD2007-04 for picloram, the PMRA proposed that all picloram end-use product labels should include the statement: "Potential Dermal Sensitizer". This was based on the 1995 USEPA RED that stated "picloram potassium salt, picloram isooctyl ester and picloram triisopropanolamine salt are classified as skin sensitizers." After the RED publication, a registrant submitted further studies to the USEPA. After reviewing the submitted studies, the USEPA determined that the potassium salt form was a skin sensitizer but that the triisopropanolamine (TIPA) salt forms were not skin sensitizers. Based on this, the registrant requested that the statement "Potential Dermal Sensitizer" should only be placed on the Tordon 22K label, the only picloram end-use product containing the potassium salt form.

Response

The PMRA considered the additional information submitted by the registrant and concluded that the label statement warning about the potential for picloram products to cause allergic reactions be required on the only picloram end-use product containing the potassium salt form, i.e. Registration Number 9005. The statement is no longer required on the labels of the end-use products containing the TIPA form of picloram. The proposed label amendments are presented in Appendix II.

3.0 Comment on the Proposed Rate Reduction

Concerns were expressed by registrants with the proposed rate reduction to 1.12 kg acid equivalent (a.e.) per hectare for all uses (i.e. for all target species) as follows:

To obtain effective control of the deep rooted perennials yellow toadflax and leafy spurge on non-cropland, rangeland and pasture, the rate of 2.16 kg a.e./ha currently on the label (i.e. 9.0 L/ha of Tordon 22K Herbicide) must be maintained. In a monograph on leafy spurge published by the Weed Science Society of America (1985), it states "that reestablishment was approximately 40% of the original stand with picloram at 1.12 kg/ha and approximately 10% of the original stand with picloram at 2.24 and 4.48 kg/ha 2 and 3 years after a single treatment."

To obtain consistent control of conifers or other hard to control brush species such as the balsam poplar on rights-of-ways in Alberta a rate of 1.3 kg a.e./ha (i.e. 20 L/ha of Tordon 101 Herbicide or Grazon Herbicide Solution) is required for brush control and a maximum rate of 1.63 kg a.e./ha is required on heavy conifer stands (i.e. 25 L/ha of Tordon 101 Herbicide or Grazon Herbicide Solution

A registrant requires the aerial application rate of 1.63 to 2.28 kg a.e./ha that is currently on the Tordon 101 Herbicide label to control unwanted brush on rights-of-ways in Ontario in order to ensure the desired brush control that is needed.

Another registrant supports reducing the maximum use rate by 29% from 35 L/ha (2.28 kg a.e./ha) to 25 L/ha (1.63 kg a.e./ha) for the control of hard to control species such as red cedar, oak, spruce and pines on the Tordon 101 Herbicide and Grazon Herbicide Solution labels. This rate (1.63 kg a.e./ha) would require re-treatment only once every seven to ten years. The 1.12 kg a.e./ha proposed by the PMRA is insufficient for brush control particularly in remote areas where long-term control of harder-to-control species (such as black spruce and pine) is required. The rate of 1.12 kg a.e./ha would result in a re-treatment frequency of every two to three years. The higher rate of 1.63 kg a.e./ha is needed to maintain safe roads, highways and railways, and to assure uninterrupted hydro electric power and natural gas supplies.

High application costs (up to \$740/ha) relative to the agricultural market and a much lower tolerance level for re-growth make it imperative that the rates are available that are effective from a single application without having to re-treat. In addition, the cost of repairing supply lines that have been impaired by the presence of undesirable vegetation is an expensive undertaking. Due to the remoteness of many sites utility companies require 100% control without having to go back in to re-treat.

Reducing the maximum application rate to 1.12 kg a.e./ha would eliminate the potential to restore native grasslands and maintain the integrity of grasslands and grazing pastures in the interior of British Columbia. It would result in environmental damage to the grasslands due to the proliferation of noxious weeds and brush and the economic

repercussions would be catastrophic. The higher rates currently on the label are required to control encroachment of brush species in the grasslands and to control noxious weeds in both grasslands and grazing pastures.

In addition the registrant wishes to continue supporting the high rate use patterns. Forty years of experience by Canadians have proven the effectiveness of the high rate use patterns. The high rates are necessary to stop the destruction of natural habitats by deep-rooted invasive weeds like leafy spurge and yellow toadflax. The other important use is the control of black spruce on rights-of-way to ensure continuous electrical supply.

Response

A rate reduction was required in the RED to mitigate phytotoxicity risk from picloram. In the PRVD published for picloram, an equivalent rate reduction was proposed to further protect non-target sensitive aquatic organisms and terrestrial plants. In the PRVD, it is stated "if the registrant wishes to keep the current maximum rate on the label for the use on pastures, rangelands and/or other non-crop areas, additional efficacy data must be submitted." The PMRA received additional efficacy data submitted by a registrant. These data were reviewed and found to be insufficient to support the registrant's claim. Based on this, the proposed rate reduction is still required. Should the need for a higher maximum application rate remain, an application, adequately supported by relevant scientific data, may be submitted to the PMRA. Such an application would be considered as a use expansion.

4.0 Comment on Use Expansion

The registrant wishes to submit a request to increase the maximum application rate of Grazon P+D Herbicide Solution (Registration Number 27634) from 0.455 kg a.e./ha to 1.12 kg a.e./ha to allow control of brush encroachment on rangeland and pasture. In addition, the registrant proposed that the product Grazon Herbicide Solution (Registration Number 26649), which is currently only registered for the use on rights-of-way, includes the use on rangelands and pastures for the control of brush encroachment.

Response

The PMRA would consider these as use expansions. The registrant should submit an application, adequately supported by relevant scientific data, to the PMRA.

5.0 Comments Pertaining to Buffer Zones

5.1 Comment on the Selected Endpoint for the Terrestrial Buffer Zones

The buffer zones proposed for picloram are excessive and could potentially result in economic hardship for Canadian ranchers, destruction or removal of terrestrial and aquatic habitats and the risk of widespread non-compliance. The terrestrial

buffer zones for picloram were calculated by the PMRA based on the most sensitive terrestrial plant endpoint cited in the 1995 USEPA RED (0.014 g a.e./ha the seedling emergence effective concentration to 25% of the population (EC₂₅) for soybeans determined in a 1989 registrant sponsored study). This old non-good laboratory practice study was not accepted by the EPA as fulfilling the core non-target plant effect data requirement. More studies were required post-RED and were performed in 1994, 1995 and 1996 to a much higher scientific standard. The terrestrial buffer zones for picloram should be recalculated based on the most sensitive endpoint from these good laboratory practice studies (i.e. 0.081 g a.e./ha the vegetative vigour phytotoxicity rating EC₂₅ for sunflower as determined in the 1996 study).

Response

The registrant submitted a comparison of the 1989, 1994 and 1995 picloram non-target plant studies along with a rationale as to why the 1989 study endpoint is inappropriate for use in risk assessment. In comparison of the visible injury, plant weight or height, the available data from 1994 and 1995 were indistinguishable from each other and within experimental error. The phytotoxicity measured in the 1989 study was approximately 1500 fold higher than that described in the more recent studies, a difference too large to be ascribed to experimental variability. In addition, the registrant states that experimental design factors such as high growing temperature, small pot size, low soil fertility and length of study probably combined to stress the plants in 1989 and make them more susceptible to injury by picloram. Moreover, plants were kept in common watering trays, which led to probable cross-contamination among dose groups and inconsistent results. The PMRA has reviewed the additional information submitted by the registrant and agrees that the 1989 data is unacceptable for use in the risk assessment.

Among the three USEPA data call-in studies, the most sensitive endpoint value was found to be the vegetative vigour phytotoxicity rating for sunflower (EC₂₅ = 0.081 g a.e./ha). The terrestrial buffer zones for picloram have been revised to reflect this endpoint. The proposed label amendments are listed in Appendix II.

5.2 Comment on the Selected Endpoint for the Aquatic Buffer Zones

Aquatic buffer zones were determined by the PMRA for picloram alone and for mixture products (2-4D + picloram) based on the most sensitive aquatic plant endpoint for *Myriophyllum*, (0.01 mg a.e./L and 0.6 ug a.e./L, respectively). The registrant accepts that *Myriophyllum* is an appropriate sensitive indicator species for aquatic plants in permanent and semi permanent water bodies and, therefore, considers the *Myriophyllum* endpoints to be sufficiently protective of such species and appropriate for use in a quotient-based risk assessment. However, for aquatic

plant species that are present in non-permanent water bodies, the registrant has proposed that the foliar exposure is likely to be the more prevalent route of exposure, and the result from the vegetative vigour test is the more protective endpoint. Sunflower is the most sensitive indicator species from that study, with a hazard endpoint of 0.081 g a.e./ha, based on the USEPA-accepted core study. This is, of course, the most protective endpoint for terrestrial plant risk assessment as well.

Response

The PMRA does not assess risk to non-permanent water bodies separately from our standard aquatic risk assessment. Therefore, we do not have buffer zones for non-permanent water bodies (i.e. temporary water pools). In the case of a standing water body that is considered to be a sensitive habitat, (e.g. a shallow prairie pothole that is filled with water), an aquatic buffer zone must be observed. If the same area later in the year is dry, the applicator is not required to adhere to the aquatic buffer zone; if the area represents a sensitive terrestrial habitat when not under water (e.g. a significant seasonal wetland), a terrestrial buffer zone must be observed.

The issue of using terrestrial vascular plants as a surrogate for predicting pesticide effects on emergent aquatic vascular plants was raised at a *Federal Insecticide, Fungicide, and Rodenticide Act* Scientific Advisory Panel meeting in 2001 (SAP Report No. 2001-08). The Scientific Advisory Panel agreed that terrestrial plant species would not adequately represent responses of emergent plant species, based on physiological differences.

Emergent plant species that support substantial below-ground biomass structures often depend critically on gas-flow through leaves and into roots, and this ability is not well expressed by terrestrial species. The tolerance of some aquatic emergent species to anaerobic conditions is allowed by metabolic pathways that differ in balance from those used by terrestrial plants with less below-ground biomass to support and fewer reducing conditions to contend with.

From a physiological perspective, the Scientific Advisory Panel concluded that there is no rationale for using terrestrial plants as surrogates for emergent aquatic plants; the PMRA agrees with this conclusion.

Appendix II Label Amendments for Products Containing Picloram

The label amendments presented above do not include all label requirements for individual end-use products, such as first aid statements, disposal statements, precautionary statements, and supplementary protective equipment. Additional information on labels of currently registered products should not be removed unless it contradicts the above label statements.

A submission to request label revisions is required within 90 days of finalization of the re-evaluation decision.

The Canadian registrant for the technical grade active ingredient has indicated that the use of picloram as a spot treatment on cultivated crops will no longer be supported in Canada. Reference to this use must be removed from all labels.

To further protect human health and the environment, labels of Canadian end-use products containing picloram must be amended as follows.

I) Rate Reduction Requirement

Canadian maximum application rates of picloram must be reduced to 1.12 kg acid equivalent (a.e.) per hectare for all uses.

II) Buffer Zone Requirements

The **ENVIRONMENTAL HAZARDS** section of all end-use product labels must include the following statement.

TOXIC to aquatic organisms and non-target terrestrial plants. Observe buffer zones specified under DIRECTIONS FOR USE.

The **DIRECTIONS FOR USE** section of all end-use product labels must include the following statements.

Field sprayer application: **DO NOT** apply during periods of dead calm. Avoid application of this product when winds are gusty. **DO NOT** apply with spray droplets smaller than the American Society of Agricultural Engineers (ASAE) coarse classification. Boom height must be 60 cm or less above the crop or ground.

The **DIRECTIONS FOR USE** section of the labels of products with the Registration Numbers 9007, 26649 and 27634 must include the following label statement.

Aerial application: **DO NOT** apply during periods of dead calm. Avoid application of this product when winds are gusty. **DO NOT** apply when wind speed is greater than 16 km/h at flying height at the site of application. **DO NOT**

apply with spray droplets smaller than the American Society of Agricultural Engineers (ASAE) coarse classification. To reduce drift caused by turbulent wingtip vortices, the nozzle distribution along the spray boom length **MUST NOT** exceed 65% of the wing- or rotorspan.

The **DIRECTIONS FOR USE** section of the labels of products with the Registration Numbers 9007 and 26649 must include the following label statement.

Buffer zones:

Use of the following spray methods or equipment **DO NOT** require a buffer zone: hand-held or backpack sprayer and spot treatment.

The buffer zones specified in the table below are required between the point of direct application and the closest downwind edge of sensitive freshwater habitats (such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs and wetlands) and estuarine/marine habitats.

Method of application	Crop		Buffer Zones (metres) Required for the Protection of Aquatic Habitat of Depths:	
			Less than 1 m	Greater than 1 m
Field sprayer*	Rights-of-way		4	2
Aerial	Rights-of-way	Fixed wing	300	150
		Rotary wing	125	60

* For field sprayer application, buffer zones can be reduced with the use of drift reducing spray shields. When using a spray boom fitted with a full shield (shroud, curtain) that extends to the crop canopy, the labelled buffer zone can be reduced by 70%. When using a spray boom where individual nozzles are fitted with cone-shaped shields that are no more than 30 cm above the crop canopy, the labelled buffer zone can be reduced by 30%.

The **DIRECTIONS FOR USE** section of the product label with the Registration Numbers 14167 must include the following label statements.

Buffer zones:

Use of the following spray methods or equipment **DO NOT** require a buffer zone: hand-held or backpack sprayer and spot treatment.

The buffer zones specified in the table below are required between the point of direct application and the closest downwind edge of sensitive terrestrial habitats (such as grasslands, forested areas, shelter belts, woodlots, hedgerows, riparian areas and shrublands), sensitive freshwater habitats (such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs and wetlands) and estuarine/marine habitats.

Method of Application	Crop	Buffer Zone (metres) Required for the Protection of:	
		Aquatic Habitats	Terrestrial Habitats
Field sprayer*	Wheat and barley, timothy and brome grass (grown for seed production only)	1	5

* For field sprayer application, buffer zones can be reduced with the use of drift reducing spray shields. When using a spray boom fitted with a full shield (shroud, curtain) that extends to the crop canopy, the labelled buffer zone can be reduced by 70%. When using a spray boom where individual nozzles are fitted with cone-shaped shields that are no more than 30 cm above the crop canopy, the labelled buffer zone can be reduced by 30%.

The **DIRECTIONS FOR USE** section of the product label with the Registration Number 9005 must include the following label statements:

Buffer zones:

Use of the following spray methods or equipment **DO NOT** require a buffer zone: hand-held or backpack sprayer and spot treatment.

The buffer zones specified in the table below are required between the point of direct application and the closest downwind edge of sensitive freshwater habitats (such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs and wetlands) and estuarine/marine habitats.

Method of Application	Crop	Buffer Zone (metres) Required for the Protection of:	
		Aquatic Habitats	Terrestrial Habitats
Field sprayer*	Rangeland and permanent grass pastures, non-cropland including rights-of-way	1	120**

* For field sprayer application, buffer zones can be reduced with the use of drift reducing spray shields. When using a spray boom fitted with a full shield (shroud, curtain) that extends to the crop canopy, the labelled buffer zone can be reduced by 70%. When using a spray boom where individual nozzles are fitted with cone-shaped shields that are no more than 30 cm above the crop canopy, the labelled buffer zone can be reduced by 30%.

** Buffer zones for the protection of terrestrial habitats are not required for use on rights-of-way including railroad ballast, rail and hydro rights-of-way, utility easements and roads.

The **DIRECTIONS FOR USE** section of the product label with the Registration Number 27634 must include the following statements.

Buffer zones:

Use of the following spray methods or equipment **DO NOT** require a buffer zone: hand-held or backpack sprayer and spot treatment.

The buffer zones specified in the table below are required between the point of direct application and the closest downwind edge of sensitive terrestrial habitats (such as grasslands, forested areas, shelter belts, woodlots, hedgerows, rangelands, riparian areas and shrublands), sensitive freshwater habitats (such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs and wetlands) and estuarine/marine habitats.

Method of application	Crop		Buffer Zones (metres) Required for the Protection of:		
			Aquatic Habitat of Depths:		Terrestrial habitat
			Less than 1 m	Greater than 1 m	
Field sprayer*	Rangeland and permanent grass pastures, non-cropland including rights-of-way		2	1	55**
Aerial	Rangeland and permanent grass pastures	Fixed wing	50	15	575
		Rotary wing	35	15	425
	Non-cropland including rights-of-way	Fixed wing	175	80	800**
		Rotary wing	70	40	750**

* For field sprayer application, buffer zones can be reduced with the use of drift reducing spray shields. When using a spray boom fitted with a full shield (shroud, curtain) that extends to the crop canopy, the labelled buffer zone can be reduced by 70%. When using a spray boom where individual nozzles are fitted with cone-shaped shields that are no more than 30 cm above the crop canopy, the labelled buffer zone can be reduced by 30%.

** Buffer zones for the protection of terrestrial habitats are not required for use on rights-of-way including railroad ballast, rail and hydro rights-of-way, utility easements and roads.

The **DIRECTIONS FOR USE** section of the labels of products with the Registration Numbers 9005, 9007, 26649 and 27634 must include the following statement.

For application to rights-of-way, buffer zones for protection of sensitive terrestrial habitats are not required; however, the best available application strategies that minimize off-site drift, including meteorological conditions (e.g. wind direction, low wind speed) and spray equipment (e.g. coarse droplet sizes, minimizing height above canopy), should be used. Applicators must, however, observe the specified buffer zones for protection of sensitive aquatic habitats.

The **DIRECTIONS FOR USE** section of the product label with the Registration Number 9007 must include the following statement.

When a tank mixture is used, consult the labels of the tank-mix partners and observe the largest (most restrictive) buffer zone of the products involved in the tank mixture.

The **DIRECTIONS FOR USE** section of the labels of products with the Registration Numbers 9005 and 14167 must include the following label statement.

DO NOT apply by air.

III) Other Label Statement Requirements

The primary display panel of label of product with the Registration Number 9005 must include the following statement.

POTENTIAL DERMAL SENSITIZER

The primary display panel of labels of products with the Registration Numbers 9007 and 26649 does not clearly indicate registered uses; therefore, the following label statement must be added.

[*Product name*] is for use on rights-of-way only to control unwanted brush and broadleaf weeds.

The **PRECAUTIONS** section of labels of end-use products containing the potassium salt form of picloram must include the following statement.

Prolonged or frequently repeated contact may cause allergic reactions in some individuals.

The **PRECAUTIONS** section of all end-use product labels must include the following statements.

Do not apply this product in a way that this product will contact workers or other persons, either directly or through drift. Only handlers (mixers, loaders and applicators) wearing personal protective equipment may be in the area being treated during application.

See **DIRECTIONS FOR USE** for crop specific REIs

The **PRECAUTIONS** section of the product label with the Registration Number 9005 must include the following statements (all other end-use products already include adequate statements).

Wear a long-sleeved shirt, long pants, shoes plus socks, and chemical-resistant gloves during mixing, loading, application, repair and clean-up activities.

There are no preharvest, pregrazing or preslaughter intervals stated on the product label with the Registration Number 9005. For consistency with other picloram Canadian labels, the following statement must be added to the **PRECAUTIONS** section.

For pastures and rangelands: Do not permit lactating dairy animals to graze fields within 7 days after application. Do not harvest forage or cut hay within 30 days after application. Withdraw meat animals from treated fields at least 3 days before slaughter.

For all end-use products, a **DIRECTIONS FOR USE** section must appear and include the following statements.

Do not apply more than once per year.

For agricultural uses: Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 12 hours.

For non-crop uses: Do not enter or allow entry into treated areas during the restricted-entry interval (REI) of 12 hours or until sprays have dried.

For the use as a direct injection into treated plants: Restricted-entry interval is not required when picloram is directly injected into treated plants.

DO NOT apply this product directly to freshwater habitats (such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs, ditches and wetlands), estuaries or marine habitats. DO NOT contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes.

An **ENVIRONMENTAL HAZARD** section must appear on all end-use product labels and must include the following statements.

Picloram is persistent and will carryover. It is recommended that any products containing picloram not be used in areas treated with this product during the previous season.

The use of this chemical may result in contamination of groundwater particularly in areas where soils are permeable (e.g. sandy soil) and/or the depth to the water table is shallow.

To reduce runoff from treated areas into aquatic habitats avoid application to areas with a moderate to steep slope, compacted soil, or clay.

Avoid application when heavy rain is forecast

Contamination of aquatic areas as a result of runoff may be reduced by including a vegetative strip between the treated area and the edge of the water body.

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<http://www3.gov.ab.ca/env/protenf/pesticide/monitoring/index.html>
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